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ABSTRACT

This study sought to answer three questions: (1) How do teachers perceive constructivist teaching and learning? (2) What are their perspectives after implementation of a constructivist curriculum? and (3) What are the problems pertaining to a transition to constructivist teaching and learning? The study analyzed the views of six third-grade teachers in six elementary schools in a Southeastern state prior to a proposed implementation of a constructivist curriculum, along with the views of the two teachers who implemented the constructivist science curriculum in their classrooms. Informal interviews prior to implementation indicated that teachers viewed a constructivist approach to teaching as a challenge and a concept that is difficult to grasp in a short period of time. They considered it an additional burden that they were unable to handle and were concerned about its effect on classroom discipline. The two teachers who did implement the constructivist approach were supportive of the curriculum but were not confident about providing appropriate materials, promoting experimentation, and initiating children's construction of knowledge. (Contains 22 references.) (EV)

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Running head: CONSTRUCTIVIST TEACHING AND LEARNING

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Teachers' Perspectives on Constructivist Teaching and Learning

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Abstract

How do teachers perceive constructivist teaching and students learning? What are their perspectives after implementation of a constructivist curriculum? What are the problems pertaining to constructivist transition? These were the issues addressed in this study mainly by analyzing views of six third grade teachers in six elementary schools in a southeastern state prior to implementation of a constructivist curriculum and the views of two teachers who implemented a constructivist science curriculum with 35 third graders in two classrooms in two elementary schools in the same state.

Teachers viewed constructivist approach to teaching a challenge and a concept that is difficult to grasp in a short period of time. Though the teachers were promised of sufficient training they considered it an additional burden that they were unable to handle. The two teachers familiar with the constructivist instruction were supportive of the curriculum but not confident of providing appropriate materials, promoting experimentation, and initiating children's construction of knowledge. Teachers were concerned with assumed discipline problems prior to implementation of the curriculum; however, constructivist classroom provided a challenging and supportive learning environment, which encouraged expected behavior in the classrooms.

Constructivist instruction requires sensitivity to all aspects of a situation in which children structure their experience in its many different spheres. For teachers to handle effectively the challenge of a constructivist curriculum with confidence, it is essential for them to develop appropriate knowledge skills and attitudes in constructivist teaching. It will allow teachers to make a smooth transition from transmitters of knowledge to facilitators of learning for the child's constructions.

Teacher Perspectives on Constructivist Teaching and Learning

The conctructivist perspective holds that the knowledge is constructed by the learner and it exists within the context of the learner (Caprio, 1994). Meaningful learning is tied to individual's own world of experiences and to the way he or she interprets the environment (Duffy & Jonassen, 1991). The contexts must be supporting, supporting and facilitating to encourage children construct knowledge through self-direction, experimentation, problem solving, and social interaction (Chaille & Britain, 1991).

Constructivism recognizes that children are at different levels of understanding and they elicit a variety of ideas shared with others which allows them to clarify their own ideas and consider those of others (Schulte, 1996). In constructivist classrooms learning occurs on the basis of prior knowledge, skills and dispositions that learners bring to the learning situations and they develop that learning by interacting with peers, teachers and the environment. However, understanding is a developmental process by which children progress from a lesser to a more perfect level; nothing is ever completely misunderstood nor it is fully well understood (Taylor, 1996). Children have their own ideas, some are correct and some are not and if the misconceptions are ignored or dismissed most likely they will hold to their original beliefs (Rutherford & Ahlgren, (1990).

The constructivist science instruction requires hands-on learning that allows children to have experiences with researching, predicting, manipulating objects, posing questions, imagining, hypothesizing, investigating and inventing (Fosnot, 1989). Learning situations where the learners have experiences with hypothesizing, predicting, experimenting, and investigating provide more opportunities for children to reach higher

levels of thinking (Dharmadasa, 1996a, 1996b, 1998). The constructivist environments where independent learning occurs reach far beyond traditional classroom settings where the teacher mostly transmits the knowledge. Transmitting is a clear-cut job: teacher decides what knowledge to transmit, communicates it to the students, and verifies what they have learned. Facilitator of knowledge construction has to be content with the fact that many aspects of the learning process are opened up to children's input and are not solely under the control of the teacher (Chaille & Britain, 1991). Teacher's ability to keep students constructively involved in learning will be the result of the environment that the teacher manages to create.

Under these circumstances, to shift from the narrow role of the transmitter to a wider role of facilitator, the teacher needs to perform numerous roles in the classroom. According to Chaille and Britain (1991) the constructivist teacher is a presenter, an observer, a question asker and problem poser, an environment organizer, a public relation coordinator, a documenter of children's learning and a theory builder. To optimize learning, the teacher should carefully and clearly organize the learning environment and work from the children's ideas, facilitating options, interacting appropriately, asking questions and posing problems to stimulate children's thinking. The constructivist teaching requires sensitivity to all aspects of a situation in which children construct their experiences in many different ways.

The constructivist mode of teaching demands a large amount of planning which is both time and energy consuming. Teachers need to believe in the new thinking and they need to make it a part of their teaching mechanism. For those teachers who do not hold constructivist views of learning (Tobin & Holman, 1990) and who continues to hold on to

their traditional beliefs and practices about learning and teaching (Wildy & Wallace, 1995), understanding and implementing a consturctivist teaching mechanism may seem as a bridge that they cannot cross through. Though many teachers experience this transition more difficult, current research bears evidence that they ease toward constructivism through the teaching journey (Bell, 1993; Cunliffe, 1994; Louden & Wallace, 1994; Peterman, 1991; Stofflett & Stoddart, 1994).

The main questions addressed in the paper are: (1) How do teachers perceive constructivist teaching and learning? (2) What are their perspectives after implementation of a constructivist curriculum? (3) What are the problems pertaining to constructivist transition? The information related to these issues were gathered as part of a large scale experimental study, implementation of a constructivist curriculum, which was planned to measure third grade children's conceptualization of the concept of "force". In this curriculum physical knowledge teaching and learning materials and series of activities were developed for six areas: push, pull, hit, balance, swing and balance for children to experiment and problem solve.

Teachers' perspectives on constructivist teaching were collected by means of informal interviews conducted with six teachers in third-grade classrooms in six elementary schools in a southeastern state, prior to implementation of the constructivist science curriculum, and with the two teachers who implemented the constructivist science curriculum with the third graders for six weeks in two elementary schools. Also the journals kept by these two teachers who implemented the curriculum were an important source of information in the study. Out of the whole sample of 67 children in

the larger study these two teachers implemented the planned constructivist curriculum with 35 children in two third grade classrooms in two elementary schools.

To identify two teachers, who would be willing to implement the constructivist science curriculum in their classrooms, individually all the six teachers were given detail explanations about the procedures to follow in the study at the beginning of the interview. For the teachers to build confidence and interest, they were assured that in the proposed constructivist curriculum the scheme of instructions and the teaching learning materials are compatible with the third grade science syllabus and no changes would be made in the normal scheduled times for science teaching. They were also informed that all the materials necessary would be provided for teaching and for students to learn the concept of force and that a short-term training course would be given to teachers to prepare them for constructivist teaching before commencement of the program.

Insufficient prior knowledge base for construcivist transmission prevented teachers from attempting the new curriculum. Without sufficient prior knowledge base teachers were not prepared to change their traditional methods of teaching. Many of the teachers were not confident of their knowledge and competencies to implement the constructivist curriculum in the manner expected. Even the assurance, that they would be provided with sufficient training on constructivist teaching procedures prior to implementation of the curriculum, did not seem to build their confidence. Some had the idea that it is difficult to grasp the concept of constructivism in the planned period of time for training which according to them was very short.

Most of them argued that making an attempt to understand this new method of teaching is an additional burden, that they could not afford, with all the work they had to

handle in their regular classes. The views expressed by these teachers indicated that they were prejudiced about the idea of constructivist teaching and they needed more time, training and encouragement to begin to think about the concept of constructivist teaching.

Four teachers out of the six rejected the idea of constructivist teaching in the proposed curriculum. Even though the principal of one of the schools agreed to try out the constructivist curriculum in his school, the third grade teacher was not willing to accept the challenge of constructivist teaching. The other two teachers, after carefully listening to the procedures of the study, had second thoughts. It indicated that some teachers did not want to change their methods of teaching and their traditional beliefs.

The traditional classroom appeared to be an obstacle for implementation of a constructivist curriculum. After listening to the descriptions given about the activities in the constructivist curriculum teachers expressed the view that this method of teaching was a difficult approach, especially, in the traditional classroom environment where the teaching-learning processes were very much structured in a systematic manner. They argued that the implementation of a constructivist approach of instruction would not be possible in their normal classrooms because of scheduled time frames, limited space and lack of storage facilities. Even with the assurance that researcher would be providing the materials for each week separately and that there would be no problems in storing them the teachers were not prepared to accept that they could do it.

Could abstract concepts be taught using text and demonstrations rather than using hands-on activities for third graders? Though teachers believed using hands-on materials is a powerful medium that affects positively on children's learning they were not really sure that such activities could be done in the third grade to teach abstract science

concepts like "force." The teachers could not think or imagine that conceptualization of abstract science concepts could be achieved through other means except using teacher demonstrations and lecture method. They explained that they use hands-on material in the classrooms mostly with demonstrations. It shows that teachers depend on the text, lectures and demonstrations for teaching science to third graders as Gardner (1983) explained that in the standard classroom teaching, teachers talk often, present materials in abstract symbolic forms relying on inanimate media such as books and diagrams in order to convey information.

The constructivist approach to teaching and learning would hinder effective classroom management is another argument those teachers who believe in traditional modes of teaching put forward. All the six teachers were concerned about the assumed discipline problems in implementing the constructivist curriculum. Teachers assumed that providing ample materials for children to have choices, and at the same time allowing them to work in-groups, would create disciplinary problems in the classrooms. Teachers thought that it would be difficult for one teacher to respond to numerous questions that the children would seek answers in their different experiments at one particular time. Also when children begin to move from their seats looking for materials appropriate for their experiments it would be difficult to control the class. Children would have problems with working in-groups such as sharing ideas and sharing materials. The teachers were more concerned about assumed disciplinary problems and problems in classroom management than in creating supportive learning environments to children.

The teachers who possess some prior knowledge of constructivist approaches tend to have positive perspectives toward constructivist teaching. After several discussion

sessions, two teachers who were somewhat familiar with the constructivist concept were found little supportive of the idea of implementation of the curriculum in their classrooms. Though they had some prior knowledge they were not confident about specific characteristics of constructivist teaching such as providing appropriate materials, promoting experimentation, probing questions and initiating children's construction of knowledge etc. However, these two teachers hesitantly expressed their willingness to undergo training and to participate in implementation of the constructivist science curriculum.

Teachers heavily rely on teacher guides and resource material for teaching science. The two teachers agreed to implement the constructivist curriculum with the understanding that instructional materials would be provided by the investigator with the detail instructions how to work through the activities. They said if the resource materials were provided it would be easy for them to work. Though it was explained to the teachers that they would be given a training how to carry out the activities and the activities would be varied according to how the children interact with the materials, the teachers wanted some resource guides to rely on. It appears that the teachers find it difficult to build confidence to follow a new mode of teaching by their own.

The two teachers who agreed to conduct the constructivist curriculum were given training on facilitating children's learning in organizing learning environments and the activities, providing appropriate materials, posing questions and facilitating individual and group activities to promote children's thinking to higher levels following Devries and Kohlberg (1987) and Kamii (1993).

The two teachers who implemented the constructivist curriculum viewed constructivist method of teaching as a challenge. They said that the greatest challenge is to prepare yourself to ask probing questions that promote children's thinking to higher levels. The teacher needs to be well conversant with the content material to make effective contact with the children at different thinking levels.

The constructivist method makes teaching easier than traditional method if the instructions were well planned and organized. As in the present study, if the teachers have the necessary instructions prepared in advance, and the teaching learning materials organized, the two teachers said, it is convenient practicing constructivist approach of teaching. If the necessary materials were there for children to interact they would engage themselves in learning tasks.

The teacher needs to be knowledgeable to select appropriate materials and to plan activities for children to master specific concepts. The teachers were of the view that in a constructivist classroom always the teacher needs to be in control ensuring that children are on appropriate tasks and also facilitating their needs. For the children to master concepts, teachers need to have a good knowledge base to facilitate children's experimentation and to pose exact questions at appropriate times for the children to reach higher levels of thinking.

The classes, small in size, promote effective teacher child interaction. The two teachers said, in small classrooms where they could allocate time to interact with each individual, the constructivists principles of teaching can be successfully practiced. The small classes also provide opportunities for children to interact with each-other, share their ideas and learn in a community.

The constructivist learning environments need flexible class time schedules compared to particular time periods in structured classrooms. Often classroom arrangements need to be adjusted according to activities planned such as group work, hands-on experiments etc. The teachers said when they worked with the constructivist activities they allowed children to move into hallways to have more room for their activities.

When children know what to do and have the materials that are necessary to do it well, they stay on task. Both teachers agreed that, at the beginning, it was a little difficult to get the children to work in-groups. However, the children were excited about the hands-on materials provided to them and once they got used to the new way of teaching and learning they seemed to be keeping themselves busy with their work. The practice of discussing and setting classroom rules with the children helped effective management of the classroom. The information provided by these two teachers indicated that after the children got used to the process of working individually or in-groups they really enjoyed the lessons. They said that the children were so busy with their tasks that they had no time to create any disciplinary problems as in the traditional classrooms. It revealed that the constructivist teaching learning environments encouraged the expected behavior in the classroom.

The two teachers agreed that providing various materials for children to experiment their theories related to a particular concept resulted in maximizing students understanding of the concept. The materials provided for hands-on-activities in the six areas: push, pull, weight, height, distance and incline helped children test the theories they had with them in their minds and get the misconceptions corrected. When children

are at a task asking questions at appropriate times helped them move on to the next level of understanding. The two teachers found that experimenting with planned materials made the students understand the concept of force more completely than looking at pictures in the books and trying to figure it out logically. It also allowed children to come to "true" conclusions about force having actual experiences rather than reading about it. watching teacher's demonstrations or listening to explanations.

When students experiment, explore and apply the retention level is much higher than when reading scripts. When children participate in hands-on activities learning becomes part of self. When children are active and interactive they share learning and become reflective thinkers.

One of the two teachers who implemented the constructivist curriculum said it is fun to teach in a constructivist approach and also it is interesting to see and work with children when they are really engaged in learning. She said she really enjoyed teaching the new curriculum as it was well planned. She had guided students to create a number of mini-projects, which she had exhibited in the hallway for others to see.

The teacher has many roles to play in a constructivist classroom. For teachers to handle effectively the challenge of a constructivist curriculum with confidence, it is essential for them to develop appropriate knowledge skills and attitudes in constructivist teaching. Agreeing with Peterman (1991) teachers who hold certain deep beliefs about teaching and learning are unlikely to change dramatically. As Tobin (1990) points out that introducing constructivist teaching to teachers who generally do not hold constructivst views on learning is asking not only for them to change their views but also the classroom practices which result from them. Teachers need more time to prepare

themselves mentally as well as physically for constructivist transition. Louden and Wallace (1994) suggested that teachers should move from existing beliefs and practices in successive small steps when they try new ideas.

When teachers implement constructivist approach in their own classrooms, there should be ways to confer encountered difficulties with professionals and get the help needed. The teachers need to use outside resources and materials such as hands-on objects, additional books, and computer programs and not rely solely on a textbook to enhance children's learning. Teachers should be provided with knowledge how, where and when to access to these resources. Appleton (1993) has suggested that a key and a necessary change would be, for teachers, to consider the preconceptions of children before they selected activities.

It is important that teachers gain experience participating in programs where they get opportunities to experiment with constructivist ideas in teaching. Traditional inservice programs need to be designed to encourage teachers to change their perspectives to embrace constructivist methods of teaching. According to Bell (1993) these programs should provide on-going practices accompanied by support, feedback and reflections which allow teachers to make a smooth transition from transmitter of knowledge to a facilitator of child's constructions.

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